REMARKS

Claims 1-29 are now pending in the above-captioned application. All of claims 1-17 were rejected under 35 U.S.C. §102(e) as being unpatentable over Defries et al. USP 6,178,217.

REJECTION UNDER 35 U.S.C. §102

Claims 1-17 were rejected under 35 U.S.C. §102(e) as being anticipated by Defries et al. Applicant respectfully traverses this rejection.

In order to be complete, an anticipation-type rejection must contain two elements:

1. The reference must qualify as "Prior Art" under one of the sections of 35 U.S.C. §102; and
2. The reference must explicitly teach *ALL* of the features of the claimed invention.

Defries has an apparent effective filing date of August 12, 1994, and thus cannot be sworn behind.

However, Defries does not teach or suggest applicant's claimed invention. While Defries speaks generally about communicating over a "conduit", Defries is rather vague when it comes to specifics as to how such communication occurs. Defries mentions twice in passing that this conduit may comprise a powerline.

However this mere mention by Defries can hardly be construed as a "teaching" *per se*. Defries mentions that his conduit may comprise a "powerline, twisted pair, Ethernet cabling, wireless, etc." (col. 15, line 67) or "air, powerline, twisted-pair, etc." (Col. 17, line 7). As one of ordinary skill in the art can appreciate, these various signal paths are quite divergent in nature and characteristics.

Defries fails to teach or suggest any solutions to the problems of powerline data transmission, other than his solution of using "noise" as a carrier wave to transmit data. At most, Defries teaches little more than what is already admitted in the BACKGROUND of the present Specification – that transmitting data over powerlines is known in the art. Defries fails to teach or suggest any solution to the numerous known problems of limited bandwidth when transmitting data over powerlines.

Indeed, the portions of Defries cited by the Examiner seem to teach just the opposite. Defries teaches the use of "bidirectional isochronous use of bandwidth" (Col. 6, lines 19-21, Col 14, lines 57-64). Thus, Defries teaches only conventional networking techniques over his "noise" carrier system.

As noted in the present Specification, such a bi-directional technique is wasteful of available bandwidth, as in most internet or network applications, the data flow is asymmetrical – more data is transmitted from the server to a client than from a client to the server. The present invention takes advantage of this situation by using only a narrow data channel to send user inputs (mouse clicks, keyboard strokes, and the like) upstream to the server. The remaining bandwidth can then be used to send compressed video data. This video data may then be directly displayed on a monitor or the like (in a thin client application) to provide a full-featured network over a power line, in a transparent manner to the user.

For this feature, the Office Action relies upon a portion of Defries (Col. 6, lines 59-64) as teaching the dynamic re-allocation of bandwidth:

> "A code switching scheme for the allocation of communication channels is included to allow the **aggregate bandwidth of the entire available communication spectrum to be dynamically reallocated** to increase or decrease channel bandwidths thereby optimizing or [sic] aggregate bandwidth and individual channel throughput." (Col. 5, lines 59-64, emphasis added)

This portion of Defries teaches only that bandwidth of the *entire* spectrum may be reallocated to optimize communication. In other words, the available spectrum for communications is not static, but may be expanded when conditions permit (and conversely reduced when conditions do not permit). This teaching appears to be a recitation of a common feature of many V.90 modems as well as so-called "spread spectrum" schemes. These schemes optimize the overall data channel based upon the conditions of the channel. However, they are directed towards traditional communications techniques.

The present invention takes a different course. Rather than try to establish a traditional Ethernet network on a home powerline, and deal with resultant bandwidth and noise limitations, the present invention works within these bandwidth limitations using an entirely different scenario. Instead of a traditional network, where signals are sent from computer to computer, the HOMEBUS invention provides a central server that runs applications programs.

In one embodiment of the invention (Specification, paragraph 15), the user terminal receives user input and displays server output, where the applications program actually resides and operates on the server. By transmitting the screen display data as MPEG data, and by using an asynchronous data path, the present invention allows a program to run on a central server (e.g., HOMEBUS server) while the program appears to be running on a relatively "dumb" terminal. Defries does not teach or suggest this concept.

The signals ordinarily sent from a keyboard to a computer and from a computer to a display are sent over the network, not the signals from a computer to a computer. Since these two types of signals have relatively fixed bandwidths, fixed data channels can be used for each. And since a video display may not change very much for minutes at a time, only change data need be sent over the HOMEBUS network to a client terminal.

In the prior art, powerline networking sends signals from a network card to a network card – the Ethernet 10baseT cables on the back of your computer. In the present invention, the network transmits the signals that go through your keyboard cord or through your VGA cable (suitably compressed, of course). By moving the network "back" into the computer, the limitations of powerline communications are no longer a hindrance.

In this manner, a central server can be located in the home (or office) and a number of terminals connected anywhere in the building where there is a common powerline plug. Such terminals would be inexpensive to build, and thus a user could have a number of terminals in many locations throughout the home or office. Software would need to run in only one location, yet be accessible to all terminals. Terminals not in use would require no data over the network. The bandwidth limitations of powerline communications would not be apparent, and to the user, the system would appear to operate in a transparent manner, i.e., as though they were typing directly into the server itself.

This basic concept is neither taught by the Prior Art cited by applicant or by the Defries reference. All of these Prior Art references are directed toward traditional peer-to-peer networking, where data is sent from the output of a computer to the input of another computer. None of these references teach the concept of sending signals over a powerline that heretofore were within the computer itself (i.e., signals from keyboard to computer and computer to monitor).

Claims 1, 8, and 13 have been amended to more clearly recite this feature of the invention.

In particular, in claims 1, 8 and 13, the reference to "network" has been eliminated, as the HOMEBUS computer system is not really a traditional network *per se* but rather a single computer system, as the title implies. In addition, the claims have been amended to recite that the server is running an application which is controlled by the client terminal. None of these features is taught or described by Defries, who teaches only conventional networking.

It should be noted that this concept can be applied to other internet appliances in the home or office as well. Thus, for example, a central server in the home or office could store various music files (e.g., MP3 or other formats) and such music could be played anywhere in the home using a simple output device plugged into a power socket. By centrally locating all the music files, the user need not store multiple copies of copyrighted material in multiple computers in order to enjoy the music in any part of the home.

Thus, claims 8 and 13 have been amended to more broadly recite that the present invention can be used to control an application running on a server by sending a signal from a client terminal over a power line. The server then sends back compressed applications output data, which the terminal then uses to generate an output.

As Defries teaches no such remote control of a server using powerlines as a signal medium, the §102 rejection should be withdrawn.

NEW CLAIMS

New claims 18-29 have been added along the lines discussed above to cover applicant's concept of an appliance interfaced with a server. This aspect of the invention allows for an appliance to be interfaced with a home server in order to receive and transmit data to the home server over the powerline.

Using such a system, a consumer can purchase any type of appliance that is "HOMEBUS" compatible and simply plug it into a wall outlet in the home. No setup, interface, or connection of

separate cables is required. And unlike conventional "Internet Appliances", a HOMEBUS appliance does not require any interface to the Internet (with associated login and access handshaking). Rather, the consumer need only have a HOMEBUS computer (which may comprise a standard home PC with HOMEBUS technology inexpensively integrated into it). Since the computer is also plugged into the wall outlet, it can automatically recognize and communicate with any HOMEBUS appliances in the home (or office).

For appliances which may receive data (e.g., claim 18) such as music data, the HOMEBUS server may provide such data, either stored internally or from the Internet or other external source. Thus, a user can plug in a HOMEBUS "radio" anywhere in the home and play music without having to access the Internet (at least directly) or be sitting in front of a PC.

Other types of appliances (e.g., claim 19), including traditional consumer applicants (e.g., refrigerator, stove, or the like) may communicate with a HOMEBUS server over powerlines, again without any intervention by the consumer or any setup or installation. Once plugged in, the appliance is automatically in communication with the HOMEBUS equipped PC and may transmit and receive data to and from the HOMEBUS equipped PC. Control of such appliances can be affected remotely, and calls for service (or replenishable parts or the like) can be automatically generated and transmitted via the HOMEBUS equipped PC.

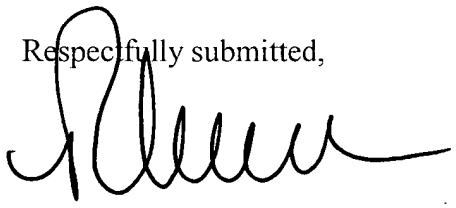
Support for these embodiments can be found, for example, in paragraphs [0004], [0005], [0013], and [0045]. The concept for the HOMEBUS is not limited to the appliances listed therein. Thus, for example, other appliances, such as an internet telephony device may be implemented using HOMEBUS such that a HOMEBUS PC interfaces with the internet to send and receive telephone signals over the internet, while a HOMEBUS telephone handset may be plugged into a power outlet in the home so that a user may use the telephone in an ordinary manner, as opposed to dialing out from and talking into a home computer.

CONCLUSION

Defries does not teach or suggest applicant's HOMEBUS system whereby a server can be controlled using a terminal connected to the server via a powerline, such that the application running on the server generates output data over the powerline which is then output on the client. Rather, Defries, teaches only a traditional networking technique, which mentions powerline applications only in passing.

As there are no other outstanding rejections in the present application, an early Notice of Allowance is respectfully requested.

Respectfully submitted,



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